Research Paper: Nonadherence Effective Factors in Bipolar Disorder With Previous Rehospitalization

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ABSTRACT

Objective: Bipolar disorder is a severe mental disorder, and its prevalence is around 1% to 2%. Despite a vast literature around bipolar disorder, the reasons of its nonadherence and rehospitalization is still obscure. Several symptoms of bipolar disorder include changes in activity level, cognitive abilities, speech, and vegetative functions, such as sleep, sexual activity, as well as aggression, irritability, impulsive behaviors, and suicide. Owning to severity of symptoms, the first line of treatment is pharmacotherapy. After treating the acute phase of the disorder and controlling the symptoms, the patient is discharged from hospital with a relatively stable condition. Therefore, it is necessary and important for a patient to follow and adhere to the treatment.

Methods: This research is a cross-sectional and prospective study. The study population includes all patients with bipolar disorder in Razi Psychiatric Hospital with a history of admission to psychiatric hospitals. A total of 73 patients with bipolar type I disorder with psychotic symptoms who had a history of admission to psychiatric hospitals with the same diagnosis, were recruited using a purposive, nonrandom sampling method. The study data were collected using medical records, semi-structured questionnaire (SCID), and a checklist.

Results: The mean age of participants was 34.25 years, ranging from 20 to 51. It was found that only a few participants had a good treatment adherence (only 3.4%). The ANOVA and Chi-square tests showed demographic variables, such as gender, education, and age had effects on treatment nonadherence of patients with bipolar disorder. The results of linear regression analysis indicated that the t value for treatment adherence was significant ($P<0.001$). According to the regression model, patient's treatment adherence in the past predicts the nonadherence in the future. Furthermore, the results showed a correlation of 0.42 between behavioral and medication treatment adherence in participants ($P<0.01$).

Conclusion: The results of the present study highlight the importance of considering the demographic variables in bipolar disorders and further investigations.

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1. Introduction

Bipolar disorder is a severe mental disorder, and its prevalence is around 1% to 2% (Kessler et al., 1994). In the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), bipolar disorder has been parted from the category of mood disorders, and has a separate category. Several symptoms of bipolar disorder include changes in activity level, cognitive abilities, speech, and vegetative functions, such as sleep, sexual activity, as well as aggression, irritability, impulsive behaviors, and suicide (15 times the general population). These symptoms threaten both patients and their relatives (Sadock & Sadock, 2011).

Because of the severity of symptoms, the first line of treatment is pharmacotherapy. In other words, pharmacotherapy in addition to reducing and controlling symptoms and stabilizing patient's condition, helps in keeping treatment gains (Suppes, Vieta, Liu, Breche, & Paulsson, 2009). After treating the acute phase of the disorder, controlling the symptoms, and following about 1 month of hospitalization (on average, 33.5 days for men and 44.7 days for women) (Amiri, Shahrokh, Ghoreyshizadeh, & Mohammadali, 2005), the patient is discharged with a relatively stable condition.

Bipolar disorder is a chronic disorder (it becomes chronic in 40% of cases), so the patients experience frequent relapses (only about 7% of patients with bipolar type 1 disorder never experience a relapse) (45% of patients experience repeated relapses [Sadock & Sadock, 2011]), and there are symptoms that threaten both the patients and people close to them. Therefore, it is necessary and important for a patient to follow and adhere to the treatment prepared and modified during hospitalization.

Treatment nonadherence is a problem that is observed in both physical and mental patients, especially those with chronic disorders. In general, 4 out of 10 patients have problems with treatment adherence (Berk et al. 2010). Treatment adherence is not just compliance, i.e. using medication without any objection, but a very broad concept that involves a using person's medication, having some behaviors, avoiding some others, following a diet, implementing and managing life style changes, keeping contact with clinician and treatment services and following their recommendations. Therefore, adherence refers to different aspects, including medication, behavior, relation, and so on.

Having problems in each of these aspects is regarded as treatment nonadherence. Treatment nonadherence may represent the patient's inability to follow some or all orders from a clinician, such as adherence to prescribed medications, behaviors, and habits (Sadock & Sadock, 2000). Nonadherence is a hidden problem, and can be intentional or unintentional, which is not usually a major focus of clinicians. Treatment nonadherence is a common and complex problem in patients with bipolar disorder, during hospitalization and after discharge.

Treatment nonadherence in patients with bipolar disorder has different forms (Colom, et al., 2005), including: 1) full nonadherence, 2) intermittent, late adherence 3) abuse, 4) selective adherence, and 5) behavior nonadherence.

Treatment nonadherence has multiple aspects, and different factors influence treatment adherence in patients (Olivares, 2013). These factors are listed as factors related to the disorder, such as 1) Insight, drug abuse, depression, pathological factors, and continuity of symptoms, 2) Factors related to medication, such as side effects, previous drug experiences, drug dosage, drug interactions and a complex diet, drug formulation, and drug expenses, 3) Factors related to clinicians and treatment centers, such as therapeutic alliance, accessibility, discharge planning, and connections between treatment services, 4) Factors related to patient, such as previous history of treatment adherence, attitude toward disorder and medication, and labels, and 5) Factors related to care provider, such as attitude toward disorder and medication, capacity for monitoring and reminding the patient to take medications, labels.

Treatment nonadherence may have some effects on patients, clinicians, and treatment centers (Haddad, Brain, & Scott, 2014). These effects are discussed below:

- Effects on patients and people close to them due to progression of the disease and its chronic nature, impairment in functioning, patient's aggression and violence, continuity of symptoms and frequent relapses, several hospitalizations, emergent and dangerous conditions for patients and people close to them, legal problems, high expenses, and other threats that the patient and people around them may face.

- Effects on clinicians and treatment centers due to an increase in the number and duration of hospitalization, unnecessary changes in diagnosis and medications, wrong diagnosis of treatment resistance, emergency admissions instead of easy and danger-free admissions to the other departments of the hospital, and high medical expenses.

Treatment adherence becomes more important when, after a short period of time, the patient is readmitted to the hospital with the same or even more severe symptoms, or in an emergency condition. In such a situation, the course of treatment is usually repeated. However, with identification of effective factors in treatment nonadherence and monitoring these factor, it is possible to increase medication adherence, reduce the danger of relapse and hospitalizations, improve involvement of patients in the course of treatment, control the symptoms, help patients learn new skills, and prevent social isolation and stigmatization (Berk et al. 2010).

In other words, by considering the effective factors in the treatment of noncompliance in the patient, it is possible to prevent relapses to a certain extent, because the previous treatment adherence pattern in a patient does not get better automatically over time (Berk et al., 2010).

The focus of the present study is on behavior and medication adherence in patients with bipolar disorder, as well as determining demographic variables in this regard. Therefore, assessing effective factors in treatment nonadherence helps to identify patients with treatment nonadherence, improve their adherence, reduce their symptoms, and prevent possible relapses and high expenses by using effective interventions.

2. Methods

This research is a cross-sectional and prospective study. The study population comprised all patients with bipolar disorder referred to Razi Psychiatric Hospital, Tehran, Iran with a history of admission to psychiatric hospitals. A total of 73 patients with bipolar type II disorder (38 women and 35 men) with psychotic symptoms who had a history of admission to psychiatric hospitals with the same diagnosis, were recruited using a purposive, nonrandom sampling method.

The study was conducted from summer 2015 to spring 2016. The study data were collected using medical records and semi-structured questionnaire (SCID), which has been widely used in clinical and nonclinical samples (Mohammadkhani, Jahani Tabesh, & Tamannaeifar, 2005).

The study data were analyzed using SPSS 21 (IBM SPSS, Chicago, IL, USA). Descriptive statistics were used to summarize demographic characteristics of the patients. The Chi-square test and ANOVA and regression analysis were used to test the study hypotheses. The Pearson correlation coefficient was used to calculate correlations and examine the predictive power of variables. The level of significance was set at $P<0.05$.

By the time that symptoms had subsided and the patient was in a relatively stable condition (usually in the second week of hospitalization), we performed the following steps. First, according to the initial diagnosis made by a psychiatrist and patient's medical records, the diagnosis of bipolar type I disorder with psychotic features was confirmed using the SCID. Then, the SCID's drug abuse and addiction criteria were administered to assess using illicit drugs, such as opiate, cannabis, heroin, crack, and methamphetamine by the patient (except cigarettes and coffee).

The study patients had to had at least one round of hospitalization with the same diagnosis in the previous year. The demographic variables for all patient were extracted from the patients' medical records. Next, the checklist for determining medication and behavior adherence was completed. Afterwards, patients were put in different groups according to their treatment adherence. Finally, the effects of study variables on patients' treatment adherence were determined.

Before conducting the study, necessary measures were taken to minimize possible harms to participants and protect their health. In addition, without any pressure or judgment, the informed consent of each participant was obtained. Moreover, patients' personal information was kept private and they were allowed to quit the study at any time.

3. Results

The mean age of participants was 34.25 years, ranging from 20 to 51. Their education degrees ranged from primary school to bachelor's degree. About 26.9% of the participants were employed and 73.1% were jobless; 46.3% were single and 34.3% were divorced.

Table 1 presents the number of patients in different treatment adherence subgroups. It was found that a few participants had a good treatment adherence (only 3.4%).

It was supposed that demographic factors are associated with treatment adherence of patients with bipolar disorder. Thus, the ANOVA and Chi-square tests were used to test this hypothesis. It was found that demographic variables, such as gender, education, and age had effects on treatment nonadherence of patients with bipolar disorder. Moreover, female patients had better medication adherence, but no significant difference was found between men and women with regard to behavior treatment adherence. Based on these results, women have

Table 1. The number of patients in different treatment adherence subgroups.

Adherence		No.	%
Medication adherence	Lack	11	15.2
	Alternate	25	36.3
	Selective	11	15.4
	Abuse	20	28.9
	Full	3	4.2
Behavior adherence	Lack	39	57.1
	Alternate	11	14.4
	Selective	17	24.4
	Full	3	4.2

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Table 2: The effect of demographic variables on adherence.

Variable	Treatment Adherence	Type of Test	Sig.	df
Sex	Drug adherence	Chi-square	0.04	3
	Behavior adherence		0.09	4
Marital status	Drug adherence	Chi-square	0.19	2
	Behavior adherence		0.41	4
Education	Drug adherence	Chi-square	0.01	3
	Behavior adherence		0.14	4
Age	Drug adherence	ANOVA	0.00	3
	Behavior adherence		0.05	2

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better medication adherence than men. There was also significant differences between participants with different education levels with regard to medication adherence ($P<0.01$), but no significant difference was found in behavior adherence. Based on the results, patients with a high school degree or higher, compared to those with a lower education, especially primary education, had better treatment adherence. Moreover, the patients aged

Table 3. The results of linear regression analysis for behavior and medication adherence in the past for the control group.

Variable	Levels of Test	Mean	SD	Correlation	Sig.	R	Adjusted R	B	Beta	t	Sig.
Drug adherence	Pretest	3.48	1.66	0.89	0.00	0.89	0.79	0.92	0.89	11.47	0.00
	Posttest	3.57	1.71								
Behavior adherence	Pretest	4.17	2.14	0.56	0.00	0.56	0.30	0.40	0.56	3.96	0.00
	Posttest	3.82	1.54								

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20 to 30 years, compared to those older than 30 years, had weaker medication adherence; similar results were found for behavior treatment adherence. Therefore, patients older than 30 years, compared to those younger than that, especially patients aged 20 to 27 years, had better medication and behavior treatment (Table 2).

It was also supposed that patient's treatment nonadherence in the past predicts their nonadherence in the future. A linear regression analysis was used to test this hypothesis. The results indicated the significance of t value for treatment adherence (P<0.001). According to the regression model, patient's treatment adherence in the past predicts their nonadherence in the future.

Overall, treatment adherence in the past predicts 79% and 30% of the total variance of medication adherence and behavior adherence in the future, respectively. The beta coefficient was also 89 and 56 for medication adherence and behavior adherence, respectively. Generally, the results of the linear regression analysis indicated that previous behavior and medication adherence of the patients in the control group, significantly predicts their treatment adherence pattern in the future (Table 3).

We used the Pearson correlation coefficient to determine whether a relationship exists between behavioral and medication treatment adherence. The results showed a correlation coefficient of 0.24 between behavioral and medication treatment adherence in all participants (P<0.04), and a correlation of 0.43 in the intervention group (P<0.01). Therefore, the results indicated a positive relationship between medication and behavior adherence.

4. Discussion

The study results indicated that female patients who are older than 30 years, compared to younger ones, especially patients aged 20 to 27 years with higher education, had better medication and behavioral treatment. It was also found that previous treatment adherence of the patients could significantly predict their treatment adherence in the future, i.e. a patient's medication and behavior adherence pattern in the past (whether readmission occurs in the first month or in the first year) would not probably change on its own. Because patients usually do not develop a better medication or behavior adherence by their own, and they will usually have the same adherence pattern in the future. The results of the studies by Velligan et al. (2010) and Berk et al. (2010) are consistent with our study findings, too.

A significant relationship was found between medication and behavior adherence (P=0.01); this indicates that our intervention led to an improvement in both types of adherence. In other words, adherence to one aspect of treatment has impact on adherence to other aspects of treatment. It was also found that medication adherence was more significant than behavior adherence, and some patients who faced with these behavioral recommendations for the first time wondered why, despite taking their medications, got sick again and readmitted to the hospital. This would result in improvement in both medication and behavior adherence, synergize their impact, and brought the patients closer to the main objective, i.e. remission.

In sum, the study results indicated the positive effect of drug attitude, insight, and the checklist (of the reasons for stopping taking medication) on treatment adherence. This conclusion is more based on theoretical grounds, and supports the previous findings.

Finally, we can conclude that by using questionnaires, many factors effective in treatment nonadherence can be assessed, and by administering proper protocols to patients in several sessions, arranging follow-up phone calls, and regular monthly visits, many problems of treatment adherence can be avoided.

This study has some limitations, too. First, participants' attrition which was due to some factors, including the symptoms of the disorder, participants' intolerance, lack of motivation, and getting tired of hospital condition. Second, the study sample was limited to patients of Razi Psychiatric Hospital. In this regard, we suggest that other studies examine these variables in other treatment centers and also in outpatient facilities. It is also suggested that, in addition to pharmacotherapy, psychotherapy and psychoeducation be included in the treatment programs of psychiatric hospitals.

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Conflict of Interest

The authors declared no conflict of interests.

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